

In the Claims:

1. (Currently Amended) A method of mapping a topology of a spare capacity of a distributed restoration algorithm (DRA) provisioned telecommunications network having a plurality of nodes interconnected with working and spare links, the method comprising:

outputting a message from each spare link of each of the nodes to the adjacent node to which the spare link is connected, wherein at least two of the nodes are interconnected with a plurality of spare links;

identifying the port number of the node from where the spare link outputs the message and the port number of the adjacent node connected to the spare link whereat the message is received;

collecting data at a central location, the data including storing as data the respective port numbers of the nodes that have connected thereto at least one spare link via which the message is either sent or received, the identifies identities of the nodes and the spare links interconnecting the nodes; and

generating from the stored data the topology of spare links interconnecting the nodes of the network.

2. (Currently Amended) The method of claim 1, further comprising:

storing the data in a central processing means computer; and

providing the generated topology of the spare links of the network to an origin node for beginning the a restoration process if a failure occurs in the network.

3. (Currently Amended) The method of claim 2, further comprising:
- continuously updating the status of the message arriving at each spare port of the nodes of the network; and
- storing the updated status in the central computer ~~a central processing means~~, wherein the central computer ~~processing means~~ uses the updated status to provide a real time topology of the spare capacity of the network.
4. (Previously Presented) The method of claim 1, wherein when a failure occurs in the network, further comprising the step of transmitting from a custodial node of the failed link a message, via a functional spare link, to downstream nodes thereof to inform downstream nodes that it is a custodial node.
5. (Original) The method of claim 1, further comprising:
- selecting a custodial node of a failed link to be an origin node; and
- the origin node utilizing the topology of the spare capacity of the network to find an alternate route for the disrupted traffic.
6. (Previously Presented) In a distributed restoration algorithm (DRA) provisioned telecommunications network having a plurality of nodes interconnected with working and spare links, a message being transmitted between adjacent nodes of the network that are connected by at least one spare link for mapping the topology of the spare capacity of the network, comprising:
- a first field containing the identification number of the node that sent the message;
- a second field containing the identification number of the port of the node whence the message is output;

a third field having an identifier that is set to a specific value when the node is a custodial node that brackets a failed link, wherein the message is broadcast from one of the custodial nodes that bracket a failed link; and

a fourth field for identifying the message to be a message that is continuously transmitted and exchanged along spare links between adjacent nodes of the network while a DRA process is not in progress.

B1 7. (Cancelled)

8. (Currently Amended) A method of mapping a topology of a spare capacity of a distributed restoration algorithm (DRA) provisioned telecommunications network having a plurality of nodes interconnected with working and spare links, the method comprising:

outputting a message continuously from each spare link of each of the nodes to the adjacent node to which the spare link is connected;

identifying the port number of the node from where the spare link outputs the message and the port number of the adjacent node connected to the spare link whereat the message is received;

collecting data at a central location, the data including storing as data the respective port numbers of the nodes that have connected thereto at least one spare link via which the message is either sent or received, the ~~identifies~~ identities of the nodes and the spare links interconnecting the nodes; and

generating from the ~~stored~~ data the topology of spare links interconnecting the nodes of the network.

9. (Currently Amended) The method of claim 8, further comprising:
storing the data in a central computer ~~a central processing means~~; and
providing the generated topology of the spare links of the network to an origin node for
beginning the restoration process if a failure occurs in the network.
10. (Currently Amended) The method of claim 9, further comprising:
continuously updating the status of the message arriving at each spare port of the nodes of
the network; and
storing the updated status in the central computer ~~a central processing means~~, wherein the
central computer ~~central processing means~~ uses the updated status to provide a real time topology
of the spare capacity of the network.
11. (Previously Presented) The method of claim 8, wherein when a failure occurs in the
network, further comprising the step of transmitting from a custodial node of the failed link a
message, via a functional spare link, to downstream nodes thereof to inform downstream nodes
that it is a custodial node.
12. (Previously Presented) The method of claim 8, further comprising:
selecting a custodial node of a failed link to be an origin node; and
the origin node utilizing the topology of the spare capacity of the network to find an
alternate route for the disrupted traffic.

13. (Currently Amended) A method of mapping a topology of a spare capacity of a distributed restoration algorithm (DRA) provisioned telecommunications network having a plurality of nodes interconnected with working and spare links, the method comprising:

outputting a message from each spare link of each of the nodes to the adjacent node to which the spare link is connected;

identifying each spare link prior to a failure, each spare link being identified by the port number of the node from where each spare link outputs the message and the port number of the adjacent node connected to each spare link whereat the message is received;

collecting data at a central location, the data including storing as data the respective port numbers of the nodes that have connected thereto at least one spare link via which the message is either sent or received, the ~~identifies~~ identities of the nodes and the spare links interconnecting the nodes; and

generating from the ~~stored~~ data the topology of spare links interconnecting the nodes of the network.

14. (Currently Amended) The method of claim 13, further comprising:

storing the data in a central computer ~~a central processing means~~; and

providing the generated topology of the spare links of the network to an origin node for beginning the restoration process if a failure occurs in the network.

15. (Currently Amended) The method of claim 14, further comprising:

continuously updating the status of the message arriving at each spare port of the nodes of the network; and

storing the updated status in the central computer ~~a central processing means~~, wherein the

central computer processing means uses the updated status to provide a real time topology of the spare capacity of the network.

16. (Previously Presented) The method of claim 13, wherein when a failure occurs in the network, further comprising the step of transmitting from a custodial node of the failed link a message, via a functional spare link, to downstream nodes thereof to inform downstream nodes that it is a custodial node.

17. (Previously Presented) The method of claim 13, further comprising:

selecting a custodial node of a failed link to be an origin node; and

the origin node utilizing the topology of the spare capacity of the network to find an alternate route for the disrupted traffic.

18. (New) A method of managing spare capacity in a communications network including a plurality of nodes interconnected via working and spare links, comprising:

transmitting a keep-alive message from a first node to a second node, via a spare link interconnecting a transmit port of the first node and a receive port of the second node; and

collecting, at a central location, a number of parameters associated with the keep-alive message, the collected parameters including a first node identifier, a transmit port identifier, a second node identifier, and a receive port identifier.

19. (New) The method of claim 18, further comprising:

conveying the collected parameters, upon a failure of one of the working links, from the central location to a network node for purposes of network restoration.

20. (New) The method of claim 19, wherein the collected parameters are conveyed to a custodial node associated with the failed link, and wherein the custodial node initiates a network restoration process.

B1 21. (New) The method of claim 18, wherein the steps of transmitting and collecting are performed for each spare link in the communications network.

22. (New) The method of claim 18, wherein the steps of transmitting and collecting are performed continually.
